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heavy, and are very pilose. The eyes are large and very prominent. The dorsum is slightly convex, and is ornamented on each side by a broad fuscous stripe, which is intersected by numerous, indistinct, dark lines.

The scuta are very smooth, and have no distinct lateral plates, but their edges are rather thin and strongly elevated. The penultimate scutum is much broader than its neighbors. The last scutum is very small. The feet are dark colored. There are two or three specimens in the possession of the Academy, which, I believe, were collected by Dr. John L. Le Conte, U. S. A., in the mountains of Georgia.

Family *SIPHONOPHORIDÆ*.

Genus *BRACHYCYBE*.

Rostrum acutum, brevissimum, antennis multo brevius.

I have never studied the allied genus *Siphonophora* of Brandt, but, if the characters relied on by that author are at all generic, there can be no doubt that the American species belongs to a distinct genus. In the *Siphonophora* the rostrum or mouth is very much elongated, and approaches the antennæ in length. In *Brachycybe* the latter are several times the longer.

B. *LECONTII*, Wood.

Fulvo-brunneus? dorso modice convexo, medio leviter canaliculato; antennis parvis, filiformibus, pilosis; scutorum superficie asperata, obscure transverse canaliculata; scuto postremo postice spinæ obtusæ serie instructo; lamineis lateralibus longis, angustis, vix sejunctis; segmentis 47; pedibus brevis pilosis.

In our specimens, which have been preserved for a long time in alcohol, the color is a light yellowish-brown. The anterior scuta are tuberculate, the posterior merely roughened. Each has a more or less obsolete transverse groove extending along the lateral lamina. The latter are very long and narrow; they are placed very close together, and are often bent slightly backwards. Their external margin is somewhat oblique, and is furnished in all except, perhaps, the most anterior, with a pore. The small feet are entirely concealed beneath the broad body. The male genital appendages consist of two pairs of acute foot-like processes. It affords me much pleasure to dedicate this species to Surgeon John L. Le Conte, U. S. A., as an acknowledgement of the many assistances which he has afforded me in the prosecution of my studies.

*Hab.*—Georgia. Coll. of the Acad. Mus. Comp. Zoology. Dr. John L. Le Conte, U. S. A.

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Note on the **PARALEPIDOIDS** and **MICROSTOMATOIDS**, and on some Peculiarities of Arctic Ichthyology.

BY THEODORE GILL.

My attention having been attracted to the resemblance between the Alepidosauroids and Paralepidoids, shortly after my article on new species of the former family, I embraced the opportunity, when in Philadelphia, to examine the specimens of the two genera, *Paralepis* and *Sudis*, in the Bonaparte collection, secured by the liberality of Dr. Wilson. The suspicions of the close affinity of the two families were fully confirmed, and the same logic that would prove the Alepidosauroids to be Siluroids, would cover the Paralepidoids. Nearly equally erroneous would be the reference of those families to the Scombroid group, near which I formerly retained it with Lowe. The Paralepidoids are, indeed, chiefly distinguished from the Alepidosauroids by the small dorsal fin, and the more posterior ventrals, and wherever one is placed, the other must be approximated next to it.

The species of this family of Paralepidoids are divisible among three groups, 186f.]

whose relations and differential characters are expressed in the following table :—

- I. Head acutely conic ; snout pointed, and oral cleft nearly rectilinear. Teeth of lower jaw part enlarged, slender and pointed, part small and slender..... PARALEPIS.
  - α. Dorsal fin decidedly in front of ventrals..... Arctozenus.
  - β. Dorsal fins opposed to ventrals..... Paralepis.
- II. Head blunt, and oral cleft curved upwards towards the end. Teeth of lower jaw partially erect, compressed, dagger-shaped, partially directed forwards..... SUDIS.

The distribution of these three groups is most remarkable. *Paralepis* and *Sudis* are types as yet only known to be represented in the Mediterranean Sea, while *Arctozenus* is represented by a single species, hitherto only found in the waters of Greenland, and yet there is the closest affinity between *Paralepis* and the Arctic type, so close, indeed, that only since the opportunity afforded to examine the detailed figures of Kroyer, have we been able to fully appreciate their distinctive characters. In order to assist less fortunate naturalists, the following diagnosis of the newly named subgenus is given.

#### ARCTOZENUS, Gill.

Head elongated conical, *attenuated* towards the snout, with the snout *quasi*-pointed, the jaws straight, the lower behind mostly covered by the upper, and little exposed along the sides ; the teeth of the lower jaw, along the anterior half, enlarged, but slender, recurved and distant ; along the posterior half, minute, acute and approximated ; the dorsal fin behind the middle, but, considerably in front of the ventrals.

*Type*.—*Paralepis borealis*, *Reinh.*

In the family of Microstomatoids,\* which is related to the Paralepidoids, we find the same peculiarity in geographical distribution ; the genus *Microstoma*† being confined to the Mediterranean, while in the Greenland seas a closely related representative is found.

Still another case of similar, or rather even more remarkable character, is exhibited by the Stomiadoids. This family, distinguished by the combination of an enormous mouth, and the opposition of the dorsal and anal fins, is composed of two genera, *Stomias* and *Malacosteus*. The former is represented by apparently *closely related* species, respectively inhabiting the Mediterranean and Greenland Seas, while of *Malacosteus*, a single species discovered south of the Newfoundland Bank has been described. As, on account of the misconceptions of the author of the last named genus, it has been involved in considerable mystery, a diagnosis of it, with reference to its ally, may be useful ; but I desire expressly to add, that I do not hold myself responsible for any of the facts, not having seen the original specimen, and that the statement of the absence of scales, &c., requires to be confirmed, although it is quite probable that none exist. The original describer has denied to the genus branchiostegal rays !

#### MALACOSTEUS, Ayres.

Proc. Boston Nat. Hist. Soc. Boston Journ. N. H. vi., 53—64.

Body elongated claviform, constricted only at the caudal peduncle ; without scales ; with the head very convex, and protuberant in front of the eyes ; the opercular and tympanic regions very oblique, the opercular bones reduced, the

\* Although the adipose fin has been denied to *Microstoma* by such skilful observers as Muller and Valenciennes, I think that I am able to distinguish it in specimens of the *M. rotundatum*, preserved in the collection of the Academy.

† *Microstoma*, *Cuv.*, R. A. 1817, ii., 184 ; Risso, 1829, ii. ; *Cuv. et Val.* xviii., 358. Reinhardt appears to have first introduced the modification *Microstomus*.

oral cleft rectilinear; *teeth* of the upper jaw minute; of the lower, in front, enlarged, but unequal, elongated, recurved and acute; behind minute; at the symphysis directed forwards; small, acute and hooked, and in a double row on the tongue; palate smooth; caudal very small, convex; pectorals inserted very low, linear, of few rays closely connected; ventrals scarcely behind the middle, with about six rays, the external (except the outermost) of which are produced. Intestine with a flexure.

*Type*.—*Malacosteus niger*, Ayres.

"The principal points on which" Mr. Ayres would "particularly insist, as characteristic of the species and the genus, are the remarkable small size of the head, and, in contrast with this, the immense development of the whole facial and branchial apparatus, and all that pertains to the mouth and throat, the singular and but partially explained organ on the cheek; and, most of all, the embryonic condition of the entire osseous system." In all respects—perhaps even the last—the genus resembles *Stomias*. Sir John Richardson has suggested that the want of ossification may be due to the preservation of the fish in weak alcohol, but I am scarcely disposed to accept that hypothesis, and would even believe that *Stomias* itself may be found to have an imperfectly ossified skeleton, but not, perhaps, in so marked degree as *Malacosteus*.

In the consideration of the faunistic anomalies here enumerated, we may be aided in a solution of the causes by the consideration of nearly similar peculiarities in the Ichthyology of the Scandinavian seas. There alone in the more northern seas, species of the genera *Beryx* and *Batrachus*, closely allied to or undistinguishable from Mediterranean or tropical species, are found, and there also has been discovered *Pterycombus*, a genus whose affinities are with the tropical *Pteraclides*. No representatives are found at intermediate places along the European coasts. Again, along the Rhode Island and neighboring coasts have already been found *Sarothrodus*, *Priacanthus*, and *Hyporthodus*, the last closely related to *Serranus*. All the places enumerated are near the borders of the Gulf Stream. How far the distribution of these genera is thereby affected it is not my intention to now discuss, my desire being simply to draw attention to the facts. Further details regarding their *bathymetrical*, as well as geographical, distribution are desirable.

#### Synopsis of the CYCLOPTEROIDS of Eastern North America.

BY THEODORE GILL.

The description of a new species of *Liparis*, from the Arctic seas, is here submitted, and attention is called to some points in the synonymy of other species of the genus which require elucidation. To complete a view of the family to which they belong, I enumerate the Cyclopterinæ. The family is restricted, with Günther, to those fishes whose sucltorial disk is formed by the union of the ventral fins, and which have numerous pyloric cæca, as it is not evident that there is any close relation between such and the *Gobiesocoids*.

#### CYCLOPTERINÆ, Bon.

CYCLOPTEROIDS with a ventricose body and two dorsal fins, the first of which is small, and composed of spines; the second, as well as anal, short, and obliquely opposed to each other; and with the caudal vertebrae in scarcely increased number, (Vert. 12+16 pm.)

#### Genus CYCLOPTERUS, L.

*Lumpus*, Cuv.

CYCLOPTERINÆ with dorsal region elevated in front, larger plates disposed in an unpaired dorsal row and two lateral and one abdominal on each side; the eyes small and anterior; the branchial apertures just above the pectoral fins; the spinous dorsal almost concealed, and the ventral disk small.

1864.]